

WHAT IS CLAIMED IS:

1. A matching chart comprising:

at least one comparison sample having a reflectance spectrum and being configured to substantially simulate a color of a keratinous element having a reflectance spectrum,

wherein the at least one comparison sample comprises at least one of a pigment and a dye selected such that the reflectance spectrum of the comparison sample is substantially similar to the reflectance spectrum of the keratinous element such that the at least one comparison sample and the keratinous element appear to an observer to have substantially the same color under at least two differing illuminants.

2. The matching chart of claim 1, wherein the at least one comparison sample is configured to be provided on packaging for a product.

3. The matching chart of claim 1, wherein the at least two differing illuminants are chosen from a D65 illuminant, a D50 illuminant, and an A illuminant.

4. The matching chart of claim 1, wherein the reflectance spectrum of the at least one comparison sample is substantially similar to the reflectance spectrum of the keratinous element in a spectral range from about 400 nm to about 800 nm.

5. The matching chart of claim 1, wherein

$$1/N(\lambda) \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.1,

wherein $I_R^{MOD}(\lambda)$ is the reflected light intensity at wavelength λ for the comparison sample and wherein $I_R^{REF}(\lambda)$ is the reflected light intensity at the wavelength λ for the keratinous element.

6. The matching chart of claim 5, wherein

$$1/N(\lambda) \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.05.

7. The matching chart of claim 6, wherein:

$$1/N(\lambda) \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.01.

8. The matching chart of claim 1, wherein the at least one comparison sample is configured to substantially simulate a color of skin.

9. The matching chart of claim 1, wherein the at least one comparison sample comprises at least one hue angle ranging from about 40° to about 70° in the CIEL* C^*h 1976 color space.

10. The matching chart of claim 9, wherein the hue angle ranges from about 46° to about 64° in the CIEL* C^*h 1976 color space.

11. The matching chart of claim 1, further comprising a plurality of comparison samples, wherein the plurality of comparison samples comprises comparison samples having differing hues.

12. The matching chart of claim 11, wherein the plurality of comparison samples comprises comparison samples having at least five differing hues.

13. The matching chart of claim 1, further comprising a plurality of comparison samples, wherein the plurality of comparison samples comprises comparison samples having differing levels of lightness.

14. The matching chart of claim 13, wherein the differing levels of lightness range from about 34 to about 75 in the CIEL^{*}C^{*}h 1976 color space.

15. The matching chart of claim 1, further comprising a plurality of comparison samples, wherein the plurality of comparison samples comprises comparison samples having differing chroma levels.

16. The matching chart of claim 15, wherein the chroma levels range from about 12 to about 30.

17. The matching chart of claim 16, wherein at least one of the chroma levels is about 22.

18. The matching chart of claim 1, further comprising a plurality of comparison samples, wherein the plurality of comparison samples comprises comparison samples having at least ten differing lightness levels.

19. The matching chart of claim 1, further comprising a plurality of comparison samples, wherein a total color difference $\Delta E^*C^*h.94$ measured in the CIEL^{*}C^{*}h 1976 color space between two comparison samples respectively substantially simulating two adjacent sample colors is substantially constant.

20. The matching chart of claim 19, wherein the total color difference ranges from about 1 to about 40.

21. The matching chart of claim 20, wherein the total color difference ranges from about 1 to about 20.

22. The matching chart of claim 21, wherein the total color difference is about 4.

23. The matching chart of claim 1, wherein the at least one comparison sample is configured such that the color is substantially uniform and substantially constant over at least a portion of a surface of the comparison sample.

24. The matching chart of claim 1, wherein the at least one comparison sample is configured such that the color is substantially uniform and substantially constant over the entire surface of the comparison sample.

25. The matching chart of claim 1, wherein the at least one comparison sample is configured such that the color of the sample is nonuniform.

26. The matching chart of claim 25, wherein the at least one comparison sample comprises at least two color coatings, each color coating being a substantially different color.

27. The matching chart of claim 1, wherein the at least one comparison sample comprises a support.

28. The matching chart of claim 27, wherein the support has a substantially rectangular shape.

29. The matching chart of claim 28, wherein the support has a width of approximately 60 millimeters and a length of approximately 100 millimeters.

30. The matching chart of claim 1, wherein each comparison sample defines a hole configured to permit observation of the keratinous element through the hole.

31. The matching chart of claim 30, wherein the hole is located at about one third of the length of the comparison sample.

32. The matching chart of claim 30, wherein the hole has a dimension of approximately 20 millimeters.

33. The matching chart of claim 32, wherein the hole is circular and the dimension is a diameter.

34. The matching chart of claim 1, wherein the at least one comparison sample comprises an identifier associated with the color of the sample.

35. The matching chart of claim 34, wherein the identifier is an alphanumeric code.

36. The matching chart of claim 1, wherein the at least one comparison sample is configured to have a non-uniform brightness.

37. The matching chart of claim 36, wherein the at least one comparison sample comprises adjacent regions having differing brightnesses.

38. The matching chart of claim 36, wherein the at least one comparison sample comprises at least one relatively shiny region, the relatively shiny region comprising a gloss varnish.

39. The matching chart of claim 38, wherein a width of the relatively shiny region is approximately 300 micrometers.

40. The matching chart of claim 36, wherein the at least one comparison sample comprises a relatively dull region, the relatively dull region comprising a mat varnish.

41. The matching chart of claim 40, wherein a width of the relatively dull region is approximately 100 micrometers.

42. The matching chart of claim 1, wherein the at least one comparison sample is further configured to simulate at least one appearance characteristic other than color of the keratinous element.

43. The matching chart of claim 42, wherein the at least one appearance characteristic other than color comprises brightness.

44. The matching chart of claim 42, wherein the at least one appearance characteristic other than color comprises relief.

45. The matching chart of claim 42, wherein the at least one appearance characteristic other than color comprises color non-uniformity.

46. The matching chart of claim 1, wherein the at least one comparison sample comprises a relief pattern, the relief pattern being configured to provide a non-uniform brightness.

47. The matching chart of claim 1, further comprising a plurality of comparison samples forming at least one set.

48. The matching chart of claim 47, wherein the plurality of comparison samples forming the at least one set are connected so as to form a fan-like configuration.

49. The matching chart of claim 1, further comprising a support and a plurality of comparison samples on the support.

50. The matching chart of claim 49, wherein the support is in the form of a strip.

51. The matching chart of claim 1, wherein the keratinous element is chosen from hair, skin, a fingernail, and a toenail.

52. A system comprising:

a plurality of comparison samples, each comparison sample having a reflectance spectrum and being configured to substantially simulate a color of a keratinous element having a reflectance spectrum,

wherein the reflectance spectrum of each comparison sample is substantially similar to the reflectance spectrum of a respective keratinous element such that the comparison sample and the keratinous element appear to an observer to have substantially the same color under at least two differing illuminants.

53. The system of claim 52, wherein the at least two differing illuminants are chosen from a D65 illuminant, a D50 illuminant, and an A illuminant.

54. The system of claim 52, wherein the reflectance spectrum of each comparison sample is substantially similar to the reflectance spectrum of the keratinous element in a spectral range from about 400 nm to about 800 nm.

55. The system of claim 52, wherein:

$$1/N(\lambda) \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.1,

wherein $I_R^{MOD}(\lambda)$ is the reflected light intensity at wavelength λ for the comparison sample and wherein $I_R^{REF}(\lambda)$ is the reflected light intensity at the wavelength λ for the keratinous element.

56. The system of claim 55, wherein

$$1/N(\lambda) \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.05.

57. The system of claim 56, wherein

$$1/N(\lambda) \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.01.

58. The system of claim 52, wherein the comparison samples are configured to substantially simulate a color of skin.

59. The system of claim 52, wherein the comparison samples comprise hue angles ranging from about 40° to about 70° in the CIEL* C^*h 1976 color space.

60. The system of claim 59, wherein the hue angles range from about 46° to about 64° in the CIEL* C^*h 1976 color space.

61. The system of claim 52, wherein the comparison samples have differing hues.

62. The system of claim 61, wherein the plurality of comparison samples comprises comparison samples having at least five differing hues.

63. The system of claim 61, wherein the comparison samples have differing levels of lightness.

64. The system of claim 63, wherein the differing levels of lightness range from about 34 to about 75 in the CIEL^{*}C^{*}h 1976 color space.

65. The system of claim 52, wherein the comparison samples have differing chroma levels.

66. The system of claim 65, wherein the chroma levels range from about 12 to about 30.

67. The system of claim 66, wherein at least one of the chroma levels is about 22.

68. The system of claim 52, wherein the plurality of comparison samples comprise comparison samples having at least ten differing lightness levels.

69. The system of claim 52, wherein a total color difference $\Delta E^*C^*h.94$ measured in the CIEL^{*}C^{*}h 1976 color space between two comparison samples respectively substantially simulating two adjacent colors is substantially constant.

70. The system of claim 69, wherein the total color difference ranges from about 1 to about 40.

71. The system of claim 70, wherein the total color difference ranges from about 1 to about 20.

72. The system of claim 71, wherein the total color difference is about 4.

73. The system of claim 52, wherein each comparison sample is configured such that the color of the each sample is substantially uniform and substantially constant over at least a portion of the surface of each comparison sample.

74. The system of claim 73, wherein each comparison sample is configured such that the color of each sample is substantially uniform and substantially constant over the entire surface of each comparison sample.

75. The system of claim 52, wherein each comparison sample is configured such that the color of the samples are nonuniform.

76. The system of claim 75, wherein each comparison sample comprises at least two color coatings, each color coating being a substantially different color.

77. The system of claim 52, wherein each comparison sample comprises a support having a substantially rectangular shape.

78. The system of claim 77, wherein the support has a width of approximately 60 millimeters and a length of approximately 100 millimeters.

79. The system of claim 52, wherein each comparison sample defines a hole configured to permit observation of the keratinous element through the hole.

80. The system of claim 79, wherein the hole is located at about one third of the length of the comparison sample.

81. The system of claim 79, wherein the hole has a dimension of approximately 20 millimeters.

82. The system of claim 81, wherein the hole is circular and the dimension is a diameter.

83. The system of claim 52, wherein each comparison sample comprises an identifier associated with the color of each sample.

84. The system of claim 83, wherein the identifier is an alphanumeric code.

85. The system of claim 52, wherein each comparison sample is configured to have a nonuniform brightness.

86. The system of claim 85, wherein each comparison sample comprises adjacent regions having differing brightnesses.

87. The system of claim 85, wherein each comparison sample comprises at least one relatively shiny region, the relatively shiny region comprising a gloss varnish.

88. The system of claim 87, wherein a width of the relatively shiny region is approximately 300 micrometers.

89. The system of claim 85, wherein each comparison sample comprises a relatively dull region, the relatively dull region comprising a mat varnish.

90. The system of claim 89, wherein a width of the relatively dull region is approximately 100 micrometers.

91. The system of claim 52, wherein each comparison sample is further configured to simulate at least one appearance characteristic other than color of the keratinous element.

92. The system of claim 91, wherein the at least one appearance characteristic other than color comprises brightness.

93. The system of claim 92, wherein at least two comparison samples are configured to have differing brightnesses.

94. The system of claim 91, wherein the at least one appearance characteristic other than color comprises relief.

95. The system of claim 94, wherein at least two comparison samples are configured to have differing degrees of relief.

96. The system of claim 91, wherein the at least one appearance characteristic other than color comprises color nonuniformity.

97. The system of claim 91, wherein each comparison sample comprises a relief pattern, the relief pattern being configured to provide a non-uniform brightness,

98. The system of claim 52, wherein the plurality of comparison samples forms at least one set.

99. The system of claim 98, wherein the plurality of comparison samples forming the at least one set are connected so as to form a fan-like configuration.

100. The system of claim 52, further comprising a support, wherein the plurality of the comparison samples are provided on the support.

101. The system of claim 100, wherein the support is in the form of a strip.

102. The system of claim 52, the keratinous element chosen from hair, skin, a fingernail, and a toenail.

103. The system of claim 52, wherein each comparison sample comprises at least one of a pigment and a dye.

104. The system of claim 52, wherein each comparison sample is configured to be displayed via an electronic image.

105. The system of claim 52, wherein each comparison sample is configured to be respectively placed on a packaging for a product intended for application to the keratinous element.

106. A method of making a comparison sample configured to substantially simulate a color of a keratinous element, the method comprising:

depositing a coating on a support, the coating having a reflectance spectrum that is substantially similar to a reflectance spectrum of a keratinous element such that the comparison sample and the keratinous element appear to an observer to have substantially the same color under at least two differing illuminants.

107. The method of claim 106, wherein the reflectance spectrum of the comparison sample is substantially similar to the reflectance spectrum of the keratinous element in a spectral range from about 400 nm to about 800 nm.

108. The method of claim 106, wherein the at least two differing illuminants are chosen from a D65 illuminant, a D50 illuminant, and an A illuminant.

109. The method of claim 106, further comprising treating at least one of the support and the coating to imitate a texture of the keratinous element.

110. The method of claim 109, wherein the keratinous element is chosen from skin, hair, a fingernail, and a toenail.
111. The method of claim 109, wherein the treating comprises embossing.
112. The method of claim 109, wherein the treating comprises printing patterns on a background, wherein a color of the patterns differ from a color of the background.
113. The method of claim 109, wherein the treating comprises applying at least one of a mat varnish and a gloss varnish.
114. A method of manufacturing a product intended for application to a keratinous element, the method comprising:
 - providing the system of claim 52;
 - selecting at least one of the plurality of comparison samples; and
 - making a product intended for application to a keratinous element according to the color of the at least one selected comparison sample.
115. The method of claim 114, wherein the providing comprises providing the system via a physical medium.
116. The method of claim 114, wherein the providing comprises providing the system in digital form configured to be printed using a digital information printing device.
117. The method of claim 114, wherein the selecting of the at least one comparison sample comprises determining which of the plurality of comparison samples substantially corresponds to a color of the keratinous element to which the product is intended to be applied.

118. The method of claim 117, wherein the keratinous element is chosen from hair, skin, a fingernail, and a toenail.

119. The method of claim 114, wherein the selecting of the at least one comparison sample comprises determining which of the comparison samples substantially corresponds to a color desired by a user of the product.

120. The method of claim 114, wherein the product is chosen from at least one of a cosmetic product and a care product.

121. The method of claim 120, wherein the product is chosen from a foundation makeup product, a concealer product, a lip makeup product, a hair coloring product, a hair care product, a nail varnish, a blush, an eyeshadow, a skin coloring product, and a skin care product.

122. The method of claim 114, wherein the providing of the system comprises providing the plurality of comparison samples as a set.

123. The method of claim 117, wherein the determining which comparison sample substantially corresponds to the color of the keratinous element comprises placing the keratinous element adjacent to at least a portion of the comparison sample so as to permit comparison of the keratinous element with the comparison sample.

124. The method of claim 114, wherein each comparison sample comprises an identifier associated with the color of the sample, and wherein the making of the product further comprises making the product based on the identifier of the selected comparison sample.

125. The method of claim 124, wherein the identifier is an alphanumeric code.

126. The method of claim 114, wherein the at least two differing illuminants are chosen from a D65 illuminant, a D50 illuminant, and an A illuminant.

127. The method of claim 114, wherein the reflectance spectrum of each comparison sample is substantially similar to the reflectance spectrum of the keratinous element in a spectral range from about 400 nm to about 800 nm.

128. The method of claim 114, wherein

$$1/N(\lambda) \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.1,

wherein $I_R^{MOD}(\lambda)$ is the reflected light intensity at wavelength λ for the comparison sample and wherein $I_R^{REF}(\lambda)$ is the reflected light intensity at the wavelength λ for the keratinous element.

129. The method of claim 114, wherein the comparison samples are configured to substantially simulate a color of skin.

130. The method of claim 114, wherein the comparison samples comprise hue angles ranging from about 40° to about 70° in the CIEL*C*h 1976 color space.

131. The method of claim 114, wherein the comparison samples have differing hues.

132. The method of claim 114, wherein the comparison samples have differing levels of lightness.

133. The method of claim 132, wherein the differing levels of lightness range from about 34 to about 75 in the CIEL* C^*h 1976 color space.

134. The method of claim 114, wherein the comparison samples have differing chroma levels.

135. The method of claim 134, wherein the chroma levels range from about 12 to about 30.

136. The method of claim 114, wherein a total color difference $\Delta E^*C^*h.94$ measured in the CIEL* C^*h 1976 color space between two comparison samples respectively substantially simulating two adjacent colors is substantially constant.

137. The method of claim 136, wherein the total color difference ranges from about 1 to about 40.

138. A method of monitoring tanning of skin, the method comprising:
providing the system of claim 52;
selecting a comparison sample that substantially corresponds to a color of the skin to be monitored;
exposing the skin to one of ultraviolet radiation, self-tanning lotion, and photosensitizing lotion; and
determining whether the color of the skin has changed by comparing the skin with the comparison samples of the system.

139. The method of claim 138, wherein the comparing of the keratinous element with the comparison samples comprises placing the keratinous element adjacent to at least a portion of one of the comparison samples.

140. The method of claim 138, further comprising selecting a tanning regime based on the selected comparison sample.

141. The method of claim 140, wherein each of the comparison samples comprises an identifier associated with the color of the sample, and wherein the selecting of the tanning regime is based on the identifier of the selected comparison sample.

142. A method of monitoring treatment of a keratinous element with a product, the method comprising:

providing the system of claim 52;

selecting a comparison sample that substantially corresponds to a color of the keratinous element;

applying a product to the keratinous element; and

determining whether the color of the keratinous element to which the product has been applied has changed after applying the product by comparing the keratinous element with the comparison samples of the system.

143. The method of claim 142, further comprising exposing the keratinous element to ultraviolet radiation prior to determining whether the color of the keratinous element to which the product has been applied has changed.

144. The method of claim 142, wherein the product is at least one of a sun protection cream and a self-tanning lotion.

145. The method of claim 142, wherein the keratinous element is chosen from hair, skin, a fingernail, and a toenail.

146. The method of claim 142, further comprising selecting from a plurality of differing products the product to be applied to the keratinous element, wherein the selecting of the product is based upon the selected comparison sample.

147. The method of claim 146, wherein each of the comparison samples comprises an identifier associated with the color of the sample, and wherein each of the plurality of differing products comprises an identifier matching one of the identifiers of the comparison samples, and wherein the selecting of the product comprises selecting the product associated with the identifier that matches the identifier of the selected comparison sample.

148. The method of claim 147, wherein the identifier is an alphanumeric code.

149. The method of claim 142, wherein the product is chosen from a cosmetic product and a care product.

150. The method of claim 149, wherein the product is chosen from foundation makeup product, a concealer makeup product, a lip makeup product, a hair coloring product, a hair care product, a nail varnish, a blush, an eyeshadow, a skin coloring product, and a skin care product.

151. The method of claim 142, wherein the providing of the system comprises providing the plurality of comparison samples as a set.

152. The method of claim 142, wherein the comparing of the comparison samples with the keratinous element comprises placing the keratinous element adjacent to at least a portion of one of the comparison samples.

153. The method of claim 142, wherein the at least two differing illuminants are chosen from a D65 illuminant, a D50 illuminant, and an A illuminant.

154. The method of claim 142, wherein the reflectance spectrum of each comparison sample is substantially similar to the reflectance spectrum of the keratinous element in a spectral range from about 400 nm to about 800 nm.

155. The method of claim 142, wherein

$$1/N(\lambda) = \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.1,
wherein $I_R^{MOD}(\lambda)$ is the reflected light intensity at wavelength λ for the comparison sample and wherein $I_R^{REF}(\lambda)$ is the reflected light intensity at the wavelength λ for the keratinous element.

156. The method of claim 142, wherein the comparison samples are configured to substantially simulate a color of skin.

157. The method of claim 142, wherein the comparison samples comprise hue angles ranging from about 40° to about 70° in the CIEL* C^*h 1976 color space.

158. The method of claim 142, wherein the comparison samples have differing hues.

159. The method of claim 142, wherein the comparison samples have differing levels of lightness.

160. The method of claim 159, wherein the differing levels of lightness range from about 34 to about 75 in the CIEL^{*}C^{*}h 1976 color space.

161. The method of claim 142, wherein the comparison samples have differing chroma levels.

162. The method of claim 161, wherein the chroma levels range from about 12 to about 30.

163. The method of claim 142, wherein a total color difference $\Delta E^*C^*h.94$ measured in the CIEL^{*}C^{*}h 1976 color space between two comparison samples respectively substantially simulating two adjacent colors is substantially constant.

164. The method of claim 163, wherein the total color difference ranges from about 1 to about 40.

165. A method of selecting a product for application to a keratinous element, the method comprising:

providing the system of claim 52;

selecting a comparison sample of the system having a color that substantially corresponds to the keratinous element to which product is to be applied; and

selecting a product from a plurality of differing products for application to the keratinous element based on the selected comparison sample.

166. The method of claim 165, wherein each of the comparison samples comprises an identifier associated with the color of the sample, and wherein the selecting of the product is based on the identifier of the selected comparison sample.

167. The method of claim 166, wherein each of the plurality of products comprises an identifier that matches one of the identifiers of the comparison samples, and wherein the selecting of the product comprises selecting the product associated with an identifier that matches the identifier of the selected comparison sample.

168. The method of claim 165, wherein the product is chosen from a cosmetic product and a care product.

169. The method of claim 168, wherein the product is chosen from a foundation makeup product, a concealer product, a lip makeup product, a hair coloring product, a hair care product, a nail varnish, a blush, an eyeshadow, a skin coloring product, and a skin care product.

170. The method of claim 165, wherein the keratinous element is chosen from skin, hair, a fingernail, and a toenail.

171. The method of claim 166, wherein the identifier comprises an alphanumeric code.

172. The method of claim 165, wherein the product affects the color of the keratinous element.

173. The method of claim 165, further comprising comparing the keratinous element to the comparison samples to determine which comparison sample has a color that substantially corresponds to the keratinous element.

174. The method of claim 173, wherein the comparing comprises placing the keratinous element adjacent to at least a portion of the comparison sample.

175. The method of claim 165, further comprising providing each of the plurality of comparison samples on a respective packaging associated with each of the plurality of differing products.

176. The method of claim 165, wherein the at least two differing illuminants are chosen from a D65 illuminant, a D50 illuminant, and an A illuminant.

177. The method of claim 165, wherein the reflectance spectrum of each comparison sample is substantially similar to the reflectance spectrum of the keratinous element in a spectral range from about 400 nm to about 800 nm.

178. The method of claim 165, wherein

$$1/N(\lambda) \sum_{\lambda} |I_R^{MOD}(\lambda) - I_R^{REF}(\lambda)| / I_R^{REF}(\lambda)$$

is not greater than 0.1,

wherein $I_R^{MOD}(\lambda)$ is the reflected light intensity at wavelength λ for the comparison sample and wherein $I_R^{REF}(\lambda)$ is the reflected light intensity at the wavelength λ for the keratinous element.

179. The method of claim 165, wherein the comparison samples are configured to substantially simulate a color of skin.

180. The method of claim 165, wherein the comparison samples comprise hue angles ranging from about 40° to about 70° in the CIEL* C^*h 1976 color space.

181. The method of claim 165, wherein the comparison samples have differing hues.

182. The method of claim 165, wherein the comparison samples have differing levels of lightness.

183. The method of claim 182, wherein the differing levels of lightness range from about 34 to about 75 in the CIEL* C^*h 1976 color space.

184. The method of claim 165, wherein the comparison samples have differing chroma levels.

185. The method of claim 184, wherein the chroma levels range from about 12 to about 30.

186. The method of claim 165, wherein a total color difference $\Delta E^*C^*h.94$ measured in the CIEL* C^*h 1976 color space between two comparison samples respectively substantially simulating two adjacent colors is substantially constant.

187. The method of claim 186, wherein the total color difference ranges from about 1 to about 40.

188. A method of manufacturing packaging for a product, the method comprising:

providing at least one comparison sample having a reflectance spectrum and being configured to substantially simulate the color of a keratinous element having a reflectance spectrum; and

providing the at least one comparison sample on packaging for a product intended for application to a keratinous element,

wherein the reflectance spectrum of the at least one comparison sample is substantially similar to the reflectance spectrum of the keratinous element such that the comparison sample and the keratinous element appear to an observer to have substantially the same color under at least two differing illuminants.

189. The method of claim 188, wherein the providing of the at least one comparison sample on the packaging comprises affixing the at least one comparison sample to the packaging.

190. The method of claim 188, wherein the providing of the at least one comparison sample on the packaging comprises printing the at least one comparison sample on the packaging.

191. The method of claim 188, wherein the at least two differing illuminants are chosen from a D65 illuminant, a D50 illuminant, and an A illuminant.

192. The method of claim 188, wherein the reflectance spectrum of the at least one comparison sample is substantially similar to the reflectance spectrum of the keratinous element in a spectral range from about 400 nm to about 800 nm.

193. The method of claim 188, wherein

$$1/N(\lambda) \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.1,

wherein $I_R^{MOD}(\lambda)$ is the reflected light intensity at wavelength λ for the comparison sample and wherein $I_R^{REF}(\lambda)$ is the reflected light intensity at the wavelength λ for the keratinous element.

194. The method of claim 188, wherein the at least one comparison sample is configured to substantially simulate a color of skin.

195. The method of claim 188, wherein the at least one comparison sample comprises hue angles ranging from about 40° to about 70° in the CIEL* C^*h 1976 color space.

196. The method of claim 188, wherein there are a plurality of comparison samples substantially simulating differing colors of keratinous elements, and wherein the method further comprises providing each comparison sample on a packaging for a product.

197. The method of claim 196, wherein providing each comparison sample on a packaging comprises providing each comparison sample on respective packagings for differing products.

198. The method of claim 188, wherein the keratinous element is chosen from skin, hair, a fingernail, and a toenail.

199. The method of claim 188, wherein the packaging is for a product chosen from a cosmetic product and a care product.

200. A method of treating a keratinous element, the method comprising:
providing the system of claim 52;
selecting a comparison sample from the system that corresponds to a desired color
for the keratinous element,
treating the keratinous element based on the selected comparison sample.

201. The method of claim 200, wherein the treating comprises applying a product to
the keratinous element.

202. The method of claim 200, further comprising selecting a product for treating
the keratinous element from a plurality of differing products based on the selected
comparison sample.

203. The method of claim 202, wherein each comparison sample comprises an
identifier associated with the color of the sample, and wherein the selecting of the product
is based on the identifier of the selected comparison sample.

204. The method of claim 203, wherein each of the plurality of products comprises
an identifier that matches one of the identifiers of the comparison samples, and wherein
the selecting of the product comprises selecting the product associated with an identifier
that matches the identifier of the selected comparison sample.

205. The method of claim 200, wherein the product is chosen from a cosmetic
product and a care product.

206. The method of claim 205, wherein the product is chosen from a foundation makeup product, a lip makeup product, a hair coloring product, a hair care product, a nail varnish, a blush, an eyeshadow, a skin coloring product, and a skin care product.

207. The method of claim 200, wherein the keratinous element is chosen from hair, skin, a fingernail, and a toenail.

208. The method of claim 200, wherein the providing of the system comprises providing the plurality of comparison samples as at least one set.

209. The method of claim 202, further comprising providing each of the comparison samples on a respective packaging for each of the plurality of differing products.

210. The method of claim 200, wherein the at least two differing illuminants are chosen from a D65 illuminant, a D50 illuminant, and an A illuminant.

211. The method of claim 200, wherein the reflectance spectrum of each comparison sample is substantially similar to the reflectance spectrum of the keratinous element in a spectral range from about 400 nm to about 800 nm.

212. The method of claim 200, wherein

$$1/N(\lambda) \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.1,

wherein $I_R^{MOD}(\lambda)$ is the reflected light intensity at wavelength λ for the comparison sample and wherein $I_R^{REF}(\lambda)$ is the reflected light intensity at the wavelength λ for the keratinous element.

213. A method of enabling an analysis of a keratinous element, the method comprising:

transmitting at least one image having a reflectance spectrum and being configured to substantially simulate a color of a keratinous element having a reflectance spectrum, wherein the reflectance spectrum of the image is substantially similar to the reflectance spectrum of the keratinous element such that the at least one image and the keratinous element appear to an observer to have substantially the same color under at least two differing illuminants.

214. The method of claim 213, further comprising comparing the keratinous element to be analyzed with the at least one image to determine if the at least one image substantially corresponds to the color of the keratinous element.

215. The method of claim 213, wherein the transmitting of the image comprises transmitting the image via a network.

216. The method of claim 213, further comprising receiving information relating to a comparison between the keratinous element and the at least one image.

217. The method of claim 213, wherein the at least two differing illuminants are chosen from a D65 illuminant, a D50 illuminant, and an A illuminant.

218. The method of claim 213, wherein the reflectance spectrum of each comparison sample is substantially similar to the reflectance spectrum of the keratinous element in a spectral range from about 400 nm to about 800 nm.

219. The method of claim 213, wherein

$$1/N(\lambda) \sum_{\lambda} \left| I_R^{MOD}(\lambda) - I_R^{REF}(\lambda) \right| / I_R^{REF}(\lambda)$$

is not greater than 0.1,

wherein $I_R^{MOD}(\lambda)$ is the reflected light intensity at wavelength λ for the comparison sample and wherein $I_R^{REF}(\lambda)$ is the reflected light intensity at the wavelength λ for the keratinous element.